

MOOLARBEN COAL COMPLEX OC3 EXTENSION PROJECT

ENVIRONMENTAL IMPACT STATEMENT

SECTION 7

JUSTIFICATION OF THE PROJECT



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7 JUSTIFICATION OF THE PROJECT

This section provides a justification and conclusion of the Project as a whole, having regard to its economic, environmental and social impacts and the principles of ESD. Consistent with the requirement of the SEARs, this section also provides an evaluation of the Project.

As part of this justification consideration has been given to:

- the design of the Project, including the avoidance and minimisation measures implemented (Section 7.1);
- strategic planning context relevant to the Project (Section 7.2);
- statutory requirements and planning policies relevant to the Project (Section 7.3);
- key engagement outcomes and associated Project design decisions and consideration of alternatives (Section 7.4);
- key impacts and benefits (Section 7.5); and
- an assessment of the Project against the objects of the EP&A Act and EPBC Act, and the principles of ESD (Section 7.6).

7.1 DESIGN OF THE PROJECT

7.1.1 Objectives of the Project

The following section gives a summary of the objectives of the Project and how they would be achieved through the relevant Project design elements.

Undertake a Logical Extension of the Moolarben Coal Complex

The Moolarben Coal Complex is an existing open cut and underground coal mining operation, with existing infrastructure including coal processing and transport facilities.

The Project would use existing and approved infrastructure and equipment at the Moolarben Coal Complex, eliminating the requirement to construct significant new infrastructure such as a CHPP and train load out facilities.

The Project area is immediately adjacent to the approved OC3 mining area, and would employ existing open cut workforce, providing continuity of open cut mining and steady production of ROM coal, as well as security of employment, following completion of the approved OC3 operations.

There would be substantial capital savings associated with the use of existing infrastructure and mobile equipment at the Moolarben Coal Complex, and operational cost efficiencies associated with the use of existing systems and workforce.

Avoid Sensitive Environmental Features within the Moolarben Valley

The Project would be located largely within land that has been previously cleared for low intensity agriculture (i.e. grazing and dryland cropping).

Direct disturbance of mapped rocky habitat associated with threatened bat species and the Broad-headed Snake would be avoided, and open cut mining would stand off Moolarben Creek by 200 m consistent with the AIP, and conservatively applying the same setback to Murdering Creek.

Develop the Project within Existing Moolarben Coal Complex Amenity Criteria

Amenity impacts (i.e. noise, air quality and visual impacts) from the existing Moolarben Coal Complex have previously been assessed and approved under the Stage 1 and Stage 2 Project Approvals, as modified.

The Project has been designed so that no additional residences require acquisition or mitigation when compared to the existing Moolarben Coal Complex.

The location of the Project within the Moolarben Valley and surrounding elevated topography (associated with the Munghorn Gap Nature Reserve and other nearby ridgelines) provides a natural barrier which limits amenity impacts at nearby private residences.

Additionally, the Project would be integrated into the existing Moolarben Coal Complex operations, resulting in no change to the overall mine life or peak production rate and, therefore, no extension in duration of potential amenity impacts beyond those previously approved.

Facilitate an Improved Final Landform and Enable Suitable Post-mining Land Uses

In order to facilitate appropriate post-mining land uses, some areas of steeper slopes within the Project area would not be mined, enabling safe, stable final landforms to be developed.

Open cut voids within the Project area would be progressively backfilled to develop a free draining final landform rather than leaving a water filled void.

Waste rock from the Project would also be used to backfill the approved OC3 final void associated with the Stage 1 Project Approval. The entire Project area, as well as an increased area in the approved OC3 mining area, would therefore be made suitable for post-mining land uses.

The conceptual post-mining land uses are a combination of native vegetation and agriculture, for integration with the approved OC3 post-mining land use, pre-mining land uses within the Project area and stakeholder feedback. The conceptual final landform design would not preclude alternative post-mining land uses (e.g. residences, tourism, conservation, recreation, renewable energy projects) should preferred land uses be determined in the future.

7.1.2 Alternatives Considered

The key feasible alternatives to the Project that were considered and not adopted were as follows:

- Not proceeding with the Project.
- Alternative open cut mining locations within MCO mining and exploration tenements outside of the Moolarben Valley.
- Alternatives to the proposed Project mining extent within the Moolarben Valley.
- Alternative mine life, peak mining rate or coal processing and transport infrastructure for the Project.
- Alternatives to the proposed mining method for the Project.
- Alternative final landform.

These are detailed further in the subsections below.

Consequences of Not Proceeding with the Project

If the Project did not proceed, while there would be reduced environmental impacts, there would likely be adverse socio-economic implications due to the following:

- Approved OC3 operations would cease following completion of approved mining, with associated impacts including:
 - sterilisation of approximately 40 Mt of ROM coal targeted by the Project (out of a total of 100 Mt within the Moolarben Valley), currently in high demand internationally for electricity generation;
 - the approved final void would remain in the OC3 final landform; and
 - potential under-utilisation of existing processing and transport infrastructure at the Moolarben Coal Complex.
- Construction capital expenditure of approximately \$140 M would not occur.
- Royalty payments and taxes for the Project would not be generated.
- Social benefits and expenditure with local contractors and businesses within the Mid-Western Regional LGA related directly to the Project would not be realised.

Additionally, if the Project were not to go ahead it is anticipated that international demand for thermal coal would be met by lower efficiency operations and/or lower quality product, effectively leading to higher overall greenhouse gas emissions (Section 2.6.2).

Alternative Open Cut Mining Locations to the Project Outside of the Moolarben Valley

An alternative where the extent of mining operations included other MCO tenements outside of the Moolarben Valley was not adopted as it would likely increase amenity impacts to private landholders and residences when not surrounded by the high ridges, and would therefore be inconsistent with the objective to develop the Project within existing amenity criteria.

Alternatives to Project Open Cut Mining Extent Within the Moolarben Valley***Mining Steep Slopes***

Alternative mine plans considered the inclusion of the steeper slopes and ridgelines within the Project area to maximise resource extraction and provide greater flexibility during mining operations.

MCO determined that open cut mining of the steeper slopes within the Project area would affect implementation of a safe and stable final landform and has therefore not been adopted as it is inconsistent with the Project objective to facilitate an improved final landform and suitable post-mining land uses.

Direct Disturbance of Mapped Rocky Habitat

Seeking to extend mining operations within identified mapped rocky habitat associated with threatened bat species and the Broad-headed Snake (and offsetting any potential impact) would increase the total magnitude of resource available for extraction.

However, given mapped rocky habitat associated with threatened bat species and the Broad-headed Snake is located within steeper slopes, this alternative was not adopted to align with the Project objective to avoid key sensitive environmental features within the Moolarben Valley.

Disturbance within 200 m of Major Drainage Features

Seeking to extend mining operations within the specified 200 m avoidance area of the major drainage lines (4th order and above) (e.g. decreasing the avoidance area to 100 m) would increase the total magnitude of resource available for extraction, but has not been adopted as it would not be consistent with the “minimal impact” criteria under the AIP or the Project objective to avoid sensitive environmental features.

Alternative Mine Life, Peak Mining Rate or Coal Processing and Transport Infrastructure for the Project***Mine Life***

An alternative Project mining schedule was considered which would have extended the approved life of the Moolarben Coal Complex (i.e. beyond 31 December 2038).

However, the implementation of Project avoidance measures (i.e. steep slopes, mapped rocky habitat and major drainage features) in the alternatives described above meant that the production schedule did not support an extended mine life.

Construction of New Coal Processing and Transport Facilities

Construction of new infrastructure could potentially reduce operational costs associated with hauling, processing and offsite transport, but would require significant capital expenditure and additional surface disturbance, and would also increase the magnitude of operations proposed within the Project area.

On this basis, MCO determined that construction of new coal processing and transport facilities within the Project area would not meet the Project objectives for undertaking a practical and efficient extension to the existing Moolarben Coal Complex, or for operating within existing amenity criteria and peak coal processing and transport limits.

Alternatives to the Proposed Project Mining Method

Due to the generally low depth of cover to the resource, underground mining methods are unsuitable for the Project.

Alternative Final Landform

An alternative final landform option for the Project has been considered where a final void or voids remain following completion of mining to reduce operational costs associated with material rehandling and rehabilitation. In the specific context of the Project it was considered reasonable and feasible to establish a final landform with no final voids, given the low depth of cover to the resource.

Similarly, MCO determined that it was feasible to backfill the approved OC3 final void as part of the Project, reducing the number of final voids in the Moolarben Valley from one to zero.

Given the Project objective to facilitate an overall improved final landform, a Project alternative that leaves the approved final void in the existing OC3 mining area or a void within the Project area has not been adopted.

7.1.3 Project Mine Design

Open Cut Mining Areas

The Project would comprise an extension to the approved OC3 open cut pit further south, as well as develop four new open cut pits to the east and south-east of the approved OC3 mining area, within existing mining tenements.

The indicative extents of the open cut pits have been designed in consideration of detailed exploration works, identified geological features and other environmental constraints, and would provide a total of approximately 40 Mt of ROM coal in addition to approved Moolarben Coal Complex operations.

Open Cut Mining Activities

The Project would mine up to 9 Mtpa of ROM coal (average of approximately 4 Mtpa over the life of the Project) using conventional open cut mining methods consistent with the existing Moolarben Coal Complex operations.

The mining areas would include supporting infrastructure such as haul roads, hardstands, ROM pads, rehabilitation and construction material stockpiles and water management structures that would be designed to integrate with the existing Moolarben Coal Complex and minimise the amount of additional infrastructure required.

A summary of the Project general mining activities and sequence is provided in Section 3.

Consistent with the existing configuration between Stage 1 and 2, ROM coal extracted for the Project would be trucked via existing Moolarben Coal Complex haul roads to be handled, processed and loaded onto trains via the existing Stage 1 infrastructure (Figure 3-3). This interaction would be subject to a separate modification to the Stage 1 Project Approval (05_0117).

A description of the rehabilitation strategy, conceptual final landform and post-mining land use for the Project is provided in Sections 3.11 and 3.16, and Attachment 8.

Indicative Mining Schedule

An indicative mine schedule and indicative mine progression for the Project are provided in Section 3.6.4.

The mining schedule would continue to be reviewed and documented in the relevant Forward Program under the Rehabilitation Management Plan framework.

Coal Processing and Product Coal Transport

ROM coal from the Project would be hauled to the Stage 1 ROM coal facility (i.e. ROM coal stockpile and transfer bin), where it would be sized (as required) and conveyed to the CHPP (along with ROM coal from the rest of the Moolarben Coal Complex) for further processing or bypass the CHPP and transferred directly to the product stockpile. Product coal would continue to be stockpiled (as necessary) and loaded onto trains for despatch to the market.

There is no change proposed to the approved coal processing and rail transport limits for the existing Moolarben Coal Complex as a consequence of the Project (Section 3.7).

Mine Infrastructure Areas

A mine infrastructure area would be constructed during the first year of the Project to the east of the approved OC3 mining area (Figure 3-1).

The mine infrastructure area would include administration offices, workshops, stores, buildings, washdown facilities, laydown and hardstand areas, ablution facilities and other related ancillary infrastructure.

A number of ROM pads would also be constructed for the Project for use when direct haulage to the Stage 1 ROM coal facility is not possible due to operational constraints.

7.2 STRATEGIC CONTEXT

7.2.1 Suitability of the Site

Location

The Project is located within the Moolarben Valley, and is surrounded in part by the Munghorn Gap Nature Reserve, which would act as a natural barrier between the Project and private residences at Cooyal to the south and Cooks Gap to the west, limiting potential visual impacts and minimising potential amenity impacts.

The Project area has largely been constrained to previously cleared land historically used for low-intensity agriculture (i.e. grazing and dryland cropping), and would avoid mapped rocky habitat associated with threatened bat species and the Broad-headed Snake located on the steeper terrain adjacent the Munghorn Gap Nature Reserve.

The Project proposes extraction of additional coal resources within existing mining and exploration tenements situated on Moolarben-owned freehold land (with minor areas of Council/Crown Land), adjacent to approved OC3 operations at the Moolarben Coal Complex (Figure 2-1).

Exploration undertaken for the Project indicates a relatively low depth of overburden cover which minimises waste rock material required to be handled to extract the coal resource (Figure 2-2). As a result, the Project provides an opportunity for efficient resource recovery and minimised environmental impacts (e.g. dust).

The Scope 1 greenhouse gas emissions (e.g. fugitive emissions) intensity is expected to be low when compared to extraction of deeper coal resources.

The Project is considered to be consistent with the Strategic Statement, particularly the stated area of action “Supporting responsible coal production in areas deemed suitable for mining”, as the Project would be located within an existing mining precinct and would be integrated into the existing Moolarben Coal Complex.

ROM coal from the Project would be handled, processed and loaded to trains using the existing Stage 1 infrastructure (subject to a separate modification). As an operating coal mine producing predominantly export quality thermal coal, MCO also has long-standing international customer relationships and existing sale agreements in place.

Access to Project areas would be via the same roads as the existing Moolarben Coal Complex, meaning there would be no additional requirement to interact with the public road network.

The existing open cut workforce would be employed for the Project. Mining of the Project area would follow the completion of the approved OC3 operations and therefore this workforce (and mining fleet) would be employed in the Project area. The Project would provide continuity and security of employment by extending the duration of employment for existing open cut workforce. At the same time, there would be no additional demand for community services and infrastructure in the region.

Natural and Built Features

The key natural features in the local vicinity of the Project area are the Munghorn Gap Nature Reserve and the Goulburn River National Park, neither of which would be directly impacted by the Project. There are no significant built (i.e. non mine-owned) features or infrastructure within the local vicinity of the Project area.

The Munghorn Gap Nature Reserve partly surrounds the Project area, however, the closest publicly-accessible recreation area (the Moolarben Picnic Area) is located approximately 1 km south of the Project and separated from the Project area by intervening topography (steep slopes and ridgelines) and existing vegetation.

The Goulburn River National Park is located approximately 7 km to the north-east of the Project, and is visually isolated from the Project area.

Additionally, no environmentally sensitive areas of State significance have been identified within the Development Application area.

Land Use

The Project is an extension of the existing Moolarben Coal Complex and is located within an existing mining precinct along with the Wilpinjong Coal Mine (immediately east) and Ulan Mine Complex (immediately north) (Figure 1-2).

Land use other than mining in the area surrounding the Project includes agricultural enterprises (i.e. grazing and dryland cropping), commercial, industrial and residential areas of Ulan, rural residential areas of Cooks Gap and Cooyal, and conservation areas (Munghorn Gap Nature Reserve and Goulburn River National Park).

The Project would be consistent with surrounding land uses. The existing Moolarben Coal Complex has also been operating concurrently with surrounding land uses since 2010.

Local Community

All private residences are separated from the Project area by significant intervening topography (steep slopes and ridgelines) and existing vegetation, limiting potential amenity impacts. The localities relevant to the Project include:

- **Moolarben** – The Project and Development Application area sit within Moolarben. There are no private residences within this locality.

- **Cooyal** – The private residence closest to the Project in Cooyal is approximately 2.5 km from the indicative surface disturbance footprint, physically separated from the Project area by the intervening topography and existing vegetation of the Munghorn Gap Nature Reserve.
- **Cooks Gap** – Cooks Gap is approximately 5 km from the boundary of the Project area, and would be a greater distance from the Project than the existing Moolarben Coal Complex.
- **Ulan** – Ulan is located approximately 6 km from the boundary of the Project, and would be significantly further away from the Project than the existing Moolarben Coal Complex operations.

Population Centres

The nearest urban locality is the town of Gulgong, located approximately 20 km to the west of the Project area, followed by Mudgee located approximately 40 km south-west of the Project area.

Potential amenity impacts to nearby population centres would be negligible given their larger distance from the Project area. No significant adverse social or economic impacts are expected for these areas given the Project is an extension of existing operations with no increase to peak employment numbers or mine life of the approved Moolarben Coal Complex.

Cumulative Impacts

Potential interactions between the Project and other existing and proposed major developments have been considered, including other nearby mining projects and renewable energy projects.

Existing Moolarben Coal Complex

The Project would result in additional ROM coal extraction and extension of employment of existing open cut workforce. However, there would be no cumulative change to the approved coal production rate, rail movements, mine life or peak employment for the Moolarben Coal Complex as a result of the Project.

In addition, the Project would have no direct interaction with the public road network as employees and deliveries would access the Project area via the existing Moolarben Coal Complex site access. No cumulative change to peak vehicle movements to and from the Moolarben Coal Complex would occur as a result of the Project.

Other Regional Operations

A number of other mines are located in the Central West region. Potential interactions with these mines are typically limited to shared use of the Sandy Hollow-Gulgong Railway, shared use of supporting contractors, contributions to regional background air quality and traffic movements, and socio-economic effects on the area (e.g. support industries based in Mudgee and other population centres in the region).

Renewable Energy Projects

There are a number of renewable energy projects associated with the Central West Orana Renewable Energy Zone that are either operational, approved but yet to be constructed or under assessment. The nearest renewable project (Ulan Solar Farm) is approximately 10 km north-west of the Project.

Minimal overlap in development requirements and operational activities between the Project and relevant renewable projects suggests that the potential for significant cumulative impacts is limited. There is also limited potential for interactions between the Project and electricity transmission upgrades.

Notwithstanding the above, any potentially relevant interactions with environmental matters for these projects (e.g. social, road transport), including mitigation measures, have been considered in the relevant subsections of Section 6.

7.2.2 Regional Context

Mining is a significant industry in the Mid-Western Regional LGA. The Project would responsibly develop resources within the LGA while minimising potential impacts to surrounding areas.

As an industry, mining contributes almost half of the Mid-Western Regional LGA's economic output each year (Section 2.3).

The Project would allow for the continuation of existing benefits, including significant economic contribution through mining and extension of employment in the region.

Mid-Western Regional Local Environmental Plan 2012

The Project is generally consistent with the aims of the Mid-Western Regional LEP outlined in clause 1.2, as development would be undertaken in a manner that mitigates or minimises potential impacts to rural and agricultural land, natural resources such as soil and water, places of Aboriginal and non-Aboriginal heritage significance, and native threatened species, populations and ecological communities (Section 6).

Additionally, progressive rehabilitation, erosion and sediment control measures would be incorporated to mitigate impacts on downstream watercourses and facilitate post-mining land uses (Section 3.16).

Mining operations and nearby agricultural enterprises have co-existed since the commencement of operations at the Moolarben Coal Complex, and this would continue for the Project.

Further discussion on the Mid-Western Regional LEP, including permissibility and special provisions, is provided in Attachment 7.

Third-party Agreements

MCO has an existing Voluntary Planning Agreement with the Mid-Western Regional Council for the approved life of the Moolarben Coal Complex in accordance with the Stage 1 Project Approval (05_0117) and Stage 2 Project Approval (08_0135).

Due to the nature of the Project (i.e. no change to the approved mine life and peak production rate of the Moolarben Coal Complex) it is not considered that there would be any increased demand for local infrastructure.

Notwithstanding, MCO and the Mid-Western Regional Council have agreed to a new Community Contribution for the Project. This contribution would be in addition to existing and ongoing contributions under the Stage 1 and Stage 2 Project Approvals.

MCO also makes financial contributions to non-Government and community organisations in the region through its Community Support Program. During 2021, MCO provided over \$138,000 to support local community, sporting, cultural, educational and recreational activities, organisations and events. This program would continue for the life of the Moolarben Coal Complex.

Noise and air quality modelling and impact assessment undertaken for the Project have not identified any additional private landholders that would require acquisition and/or mitigation rights due to predicted noise or air quality impacts (Sections 6.7, 6.8 and 6.9).

7.2.3 State Context

For the NSW mining industry, responsible, efficient operations such as the Project would be key to providing ongoing coal supply during the global transition to low carbon energy sources. This would also provide flow-on economic benefits to NSW through the continued generation of royalties and employment for local and regional communities.

Strategic Statement on Coal Exploration and Mining in NSW

The Strategic Statement recognises the importance of coal production to NSW, including how regional NSW communities depend on the industry, which provides more than 110,000 direct and indirect jobs in the State as well as significant royalties (approximately \$2 B in 2018-2019) that are used to fund public services and infrastructure (NSW Government, 2020a).

A balanced approach to coal exploration and mining is described in the Strategic Statement, setting a clear and consistent policy framework that supports investment certainty while giving coal-reliant communities time to adapt to a global transition to low carbon energy sources.

The Strategic Statement describes the NSW Government's four areas for action within the coal sector, as follows:

1. *Improving certainty about where coal mining should not occur.*
2. *Supporting responsible coal production in areas deemed suitable for mining.*
3. *Addressing community concerns about the impacts of coal mining.*
4. *Supporting diversification of coal-reliant regional economies to assist with the phase-out of thermal coal mining.*

In consideration of the above, and of the Strategic Statement as a whole, the following details how the Project would be consistent with the NSW Government's goals and areas of action:

- The Project is a logical extension to the existing Moolarben Coal Complex which has been operating since 2010.

- The Project would realise additional coal extraction within existing mining and exploration tenements immediately adjacent to the existing operations.
- The Project area is not located within areas marked as “coal mining prohibited”, or where open cut coal mining is not supported, on the map accompanying the Strategic Statement.
- The Project would support the ongoing financial sustainability of the Moolarben Coal Complex through the use of existing infrastructure and mobile equipment as well as employing existing open cut workforce.
- The Project would be developed in a manner that is responsible and considers the benefits and consequences of the development for other land uses, including coexistence with the adjacent Munghorn Gap Nature Reserve and surrounding agricultural land.
- The Project decision-making process would be informed by public involvement through the Project EIS consultation program (Section 5), public exhibition of the EIS document and assessment of the Project in accordance with the EP&A Act.
- The Project area would be rehabilitated to a safe, stable final landform with no final voids, maximising the land available for beneficial post-mining land uses.
- Waste rock from the Project would be used to backfill the approved OC3 final void (i.e. the Project would reduce the number of voids in the Moolarben Valley from one to zero), creating an improved and integrated final landform.
- The Project would incorporate comprehensive mitigation, monitoring and adaptive management measures (Section 6 and Attachment 9).
- The Project would result in the following benefits for the local area, the State of NSW and for the national economy:
 - extension of employment of existing open cut workforce, and other expenditure-induced indirect jobs;
 - support for local and regional business, including construction-related capital expenditure and ongoing operating expenditure;
 - Commonwealth tax contributions;
 - contributions to local government for community infrastructure and services; and
 - payment of royalties and taxes to the NSW Government over the life of the Project.

Net Zero Plan Stage 1: 2020-2030

The Net Zero Plan provides the foundational framework for NSW to reach net zero emissions by 2050. The *Net Zero Plan Stage 1: 2020–2030 Implementation Update* was released in September 2021 (NSW Government, 2021), and included the following key statement:

NSW Government policy is that the NSW Government's objective set out in this Plan, to reduce emissions by 50% below 2005 levels by 2030, is not to be considered in the assessment or determination of development and infrastructure applications under the Environmental Planning and Assessment Act 1979.

Notwithstanding the above, the Project has a low Scope 1 emissions intensity compared to other NSW mining operations including a very low fugitive emissions intensity (for both methane and CO₂) from open cut mining due to the shallow depth of cover and low in-situ gas content of the target coal seam (Appendix J).

NSW Aquifer Interference Policy

In accordance with the AIP minimal impact considerations for water quality, the Project would avoid open cut mining within 200 m of Moolarben Creek, and conservatively apply the same criteria to Murdering Creek.

By restricting open cut mining for the Project to outside the 200 m setback threshold, and maintaining consistency with other relevant requirements, the Project would meet the criteria for “minimal impact” as detailed in the AIP.

7.2.4 National Context

In recognition of the importance of sustainable development, the Commonwealth Government developed the NSESD. Accordingly, Project design, planning and assessment has been carried out applying the principles of ESD.

Further detail on how the principles of ESD have been considered in development of the Project is provided in Section 7.6.3.

7.2.5 International Context

The main international consideration for the Project is the balance between a long-term global response to climate change and the short- to medium-term demand for affordable and reliable baseload electricity generation from thermal coal.

Over the life of the Project, the international demand for thermal coal is expected to remain steady, partly due to developing countries seeking to provide their communities with access to electricity to support economic growth and improve the quality of life (NSW Government, 2020a).

The Project presents an opportunity to provide thermal coal to existing customers and meet energy demands while alternative energy sources become more available globally.

Paris Agreement

The *Paris Agreement*, a legally binding international treaty on Climate Change under the UNFCCC to which Australia is a party, entered into force on 4 November 2016. The goal of the *Paris Agreement* is to limit the increase in global temperature to 2°C (when compared to pre-industrial temperatures).

The Project is an extension of existing operations at the Moolarben Coal Complex, which has existing sale agreements with customers in countries subject to the requirements of the *Paris Agreement* or with domestic policies consistent with the *Paris Agreement*.

Demand for Thermal Coal

The NSW Government estimates that approximately 85% of coal mined in NSW is exported internationally, and used for electricity generation. It is estimated that global demand for seaborne thermal coal would increase to over 950 Mt leading up to 2030, at which point demand would begin to steadily decline (NSW Government, 2020a). By comparison, total NSW exports in 2021 was 164 Mt of coal (NSW Mining, 2022).

Under the scenario of a reduced export regime from NSW, most coal consumers would be likely to source their coal from elsewhere, and much of this coal would be lower quality compared to NSW coal (NSW Government, 2020a). Lower quality coal requires the consumption of more fuel to produce equivalent energy, increasing overall environmental impacts.

This is supported by recent statements from Australian Prime Minister Anthony Albanese (Australian Broadcasting Corporation, 2022):

If Australia today said we are not going to export any more coal, what you'd see is a lot of jobs lost, you would see a significant loss to our economy, significantly less taxation revenue for education, health and other services, and that coal wouldn't lead to a reduction in global emissions, what you would see is a replacement with coal from other countries that's likely to produce higher emissions because of the quality of our product.

The Moolarben Coal Complex is an operating thermal coal mine with long-standing international customer relationships and existing sale agreements for thermal coal exports. The Project would allow MCO to continue to meet global demand for thermal coal in the short- to medium-term.

7.3 STATUTORY REQUIREMENTS

The following sub-section is a brief synthesis of the statutory requirements as described in Section 4 and Attachment 7 of the EIS.

The EP&A Act and EP&A Regulation set the framework for planning and environmental assessment in NSW. Approval for the Project would be sought under the State Significant Development provisions (i.e. Division 4.7) under Part 4 of the EP&A Act.

In accordance with section 4.36 of the EP&A Act, as well as section 2.6 of the Planning Systems SEPP, the Project is State Significant Development (Section 4.2.1).

In accordance with subsection 4.5(a) of the EP&A Act and subsection 2.7(1) of the Planning Systems SEPP, the Minister or the IPC is the consent authority for the Project.

As detailed in section 4.3, the Project would be consistent with all requirements of the EP&A Act and EP&A Regulation.

Development of the Project was determined to be a “Controlled Action”. Therefore the Action requires approval under the EPBC Act due to potential impacts on the following MNES under Part 3 of Chapter 2 of the EPBC Act:

- listed threatened species and communities (sections 18 and 18A); and
- a water resource, in relation to coal seam gas development and large coal mining developments (sections 24D and 24E).

Sections 6.3 to 6.6 give a summary of the assessment undertaken for the identified MNES, as well as any relevant mitigation and management measures that would be implemented for the Project.

As detailed in Section 4 and Attachment 7, the Project would be developed consistent with all relevant statutory requirements, and MCO would obtain any licences or approvals as required from time to time.

7.4 KEY ENGAGEMENT OUTCOMES AND ASSOCIATED PROJECT DESIGN

Consultation conducted during the preparation of this EIS has provided the opportunity to identify issues of concern or interest to stakeholders and to consider these issues within this EIS.

Consultation for this EIS has been undertaken in consideration of *Undertaking Engagement Guidelines for State Significant Projects* (DPIE, 2021b) given that:

- Extensive consultation has been conducted throughout the operation of the Moolarben Coal Complex since 2010.
- The extensive consultation undertaken has allowed for key concerns in regard to the Moolarben Coal Complex and the Project to be well understood.
- A range of engagement activities for the Project have been undertaken, including:
 - engagement undertaken during the development of the SIA;
 - recurring CCC meetings;
 - community information sessions;

- distribution of community newsletters; and
- maintenance of the MCO website and a community hotline for provision of feedback regarding the Moolarben Coal Complex and the Project.

- Commitment to continue consultation with a range of stakeholders following the lodgement of the EIS and during the life of the Project.

Regulatory and public engagement by MCO for the Project (Section 5) identified the following key assessment issues for the Project:

- The majority of stakeholders identified that the Project represents an extension of existing operations and acknowledged MCO’s existing contributions and support of community and sporting groups, local businesses and expenditure.
- Local residents in Cooyal identified that they already experience some amenity impacts as a result of existing operations at both the Moolarben Coal Complex and the Wilpinjong Coal Mine.
- Cooyal residents raised concerns regarding the potential for increased noise, dust and visual (lighting) amenity impacts as a result of the Project, however recognised that the significant intervening topography of the Munghorn Gap Nature Reserve would minimise this potential. A few landholders also raised concerns regarding potential impacts to water supply.
- Landholders in Cooks Gap acknowledged that amenity impacts experienced from the existing Moolarben Coal Complex would decrease as mining operations move into the Project area.
- A number of stakeholders, including both local residents and the broader community, were particularly interested in the conceptual post-mining land use of the Project area.
- Feedback received from the community indicated a preference for some areas of the final landform to be reinstated to agricultural land, as well as other potential beneficial uses of the rehabilitated Project area, including recreation, tourism or industry.
- Stakeholders also requested consideration be given to the biodiversity values of the adjacent Munghorn Gap Nature Reserve and opportunities to enhance or expand areas of native vegetation in the Project final landform.

Key potential adverse impacts raised by the community can be generally grouped into:

- amenity impacts (e.g. dust, noise and lighting) to nearby residences;
- impacts to water supply as a result of groundwater drawdown on private bores; and
- impacts to nearby land uses (e.g. agriculture and conservation) as a result of the Project final landform.

Key potential benefits of the Project identified during stakeholder engagement included socio-economic benefits, and opportunities to provide agricultural land and extended nature conservation areas as post-mining land uses. It is noted that potential adverse social impacts were not generally raised as a concern for the Project (Section 6.17 and Appendix E).

A number of alternatives to the Project have been considered by MCO in the development of this EIS in light of engagement feedback. An analysis of key alternatives to the Project considered by MCO is provided in Sections 2.7 and 7.1.2.

MCO has sought to address stakeholder concerns through commitment to a number of significant Project design measures, ongoing community engagement and effective environmental management.

The Project objectives (Section 1.2) have been developed in consideration of stakeholder feedback as described above. This includes the objectives to develop the Project within existing Moolarben Coal Complex amenity criteria, to facilitate an improved final landform and enable suitable post-mining land uses, and to avoid sensitive environmental features.

The Project has been designed to achieve the Project objectives as described in Section 7.1.1 and discussed further below.

7.5 EVALUATION OF KEY IMPACTS AND BENEFITS

7.5.1 Key Potential Impacts

Regulatory and public engagement by MCO for the Project has identified a number of key assessment issues for the Project (Section 6). Key potential Project direct and indirect adverse impacts are described below.

Potential Direct Adverse Impacts

Key potential direct adverse impacts associated with the Project include the following:

- **Noise, Air, Blasting and Visual** – Amenity impacts would be mitigated in part by the position of the Project within the Moolarben Valley, which is surrounded by steep slopes and ridgelines that act as a natural barrier. Additionally, in accordance with the Project objectives, the Project would be developed to ensure no additional residences require acquisition or mitigation when compared to the existing Moolarben Coal Complex.

No exceedances of relevant noise, air, blast or visual criteria are predicted at private residences, and the Project would comply with the existing amenity criteria for the Moolarben Coal Complex.

- **Aboriginal Cultural Heritage** – Potential impacts on sites located within or directly adjacent to the Project indicative surface disturbance extent would be managed in accordance with a Heritage Management Plan that incorporates outcomes of consultation with the RAPs and Heritage NSW.

It is noted that the ACHA for the Project concluded that the Project would not result in any significant cumulative impacts on Aboriginal cultural heritage in the region (though it is acknowledged that all Aboriginal cultural heritage impacts are significant to the relevant stakeholders).

- **Groundwater** – Groundwater impacts from the Project are limited by the shallow depth of cover to the target resource, and previous mining causing the seam to be largely unsaturated. The Project is predicted to comply with the “minimal impact” criteria of the AIP.
- **Surface Water** – Surface water quality flows would be managed through the implementation of a Project water management system, which would maximise the diversion of clean water runoff around the Project site where practicable, and manage runoff of sediment-laden and mine-affected water.

The Project avoids open cut mining within 200 m of 4th order and above streams in the Moolarben Valley, and accordingly flows and water quality in these major drainage lines would be unaffected by the Project. With the implementation of these management measures there is expected to be negligible impact to downstream water quality and flows, and unlikely to be discernible.

Following rehabilitation, the final landform would be free-draining. This includes the Project backfilling the currently approved OC3 final void. The Project would therefore reduce the number of voids in the Moolarben Valley from one to zero.

- **Terrestrial Ecology** – Potential impacts on native threatened species, populations and ecological communities have been considered, and the requirement for a biodiversity offset strategy has been determined.

The Project would avoid mapped rocky habitat associated with threatened bat species and the Broad-headed Snake located on the steeper terrain adjacent the Munghorn Gap Nature Reserve. The conceptual final landform incorporates habitat enhancement measures, management of weeds and pest animals, and establishment of appropriate flora.

Residual biodiversity impacts would be offset in accordance with the BC Act.

- **Agricultural Land** – Land within the Project area that is currently licensed for agricultural use would not be available during the Project, however, this impact would be temporary as conceptual post-mining land uses for the Project include areas of agricultural land consistent with the pre-mining land use.
- **Social** – No traditional adverse socio-economic impacts were identified that would occur as a result of the Project (e.g. restrictions on access to social infrastructure, impacts to income). However, it is acknowledged that uncertainty and concerns regarding other aspects of the Project operations may occur in the local and regional community.

MCO maintains a website and community hotline for feedback and concerns regarding the Moolarben Coal Complex, and would continue to monitor, review and adapt community engagement over the life of the Project to maintain effective community consultation.

Potential Indirect Adverse Impacts

Most potential indirect impacts of the Project identified are positive in nature (e.g. indirect employment effects, supplier benefits, economic benefits).

However, an indirect adverse impact of the Project would be Scope 1 and Scope 2 greenhouse gas emissions of the Project, and Scope 3 greenhouse gas emissions (i.e. customer greenhouse gas emissions from the burning of Project product coal), contributing to global climate change effects.

It is acknowledged that (subject to the efficacy of national and international greenhouse gas abatement measures) all sources of greenhouse gas emissions would contribute in some way towards the potential global, National, State and regional effects of climate change (Sections 7.2.4 and 7.2.5).

The Project's contribution to global climate change effects would be proportional to its contribution to global greenhouse gas emissions. Appendix J describes the predicted relative contribution of the Project to global emissions and the role of individual customer countries in setting the methods and targets for greenhouse gas reductions under their NDCs.

It is noted that product coal from the Project would be supplied to overseas customers in countries subject to the requirements of the *Paris Agreement* or with domestic policies consistent with the *Paris Agreement*.

It is recognised that international measures to "decarbonise" global economies may alter the future demand for and/or supply of coal. Expected global trends are factored into coal price forecasts considered in the Economic Assessment, which shows that the Project would still generate a net benefit to NSW under the scenarios considered (Appendix K).

As a large, low-cost, low-emission mine site, the Moolarben Coal Complex including the Project, has the ability to remain competitive in the global coal market and is well placed to continue supplying thermal coal to the export market during the transition to a lower carbon economy.

The Project has a low Scope 1 emissions intensity compared to other NSW mining operations including a very low fugitive emissions intensity (for both methane and CO₂) from open cut mining (Appendix J).

Greenhouse gas emissions from the Moolarben Coal Complex are currently measured and reported annually in accordance with the NGER Act, which would continue for the Project.

7.5.2 Key Potential Benefits

Key potential benefits identified for the Project include direct and indirect employment effects, economic benefits (including to the State), improved final landform and optimised return on capital investment at the Moolarben Coal Complex.

The existing open cut workforce would be employed for the Project. The Project would provide continuity and security of employment by extending the duration of employment for existing open cut workforce. At the same time, there would be no additional demand for community services and infrastructure in the region.

The Economic Assessment for the Project indicates a net benefit of \$182 M in NPV terms to the State of NSW (Appendix K).

In accordance with the Project objectives, the Project would facilitate an improved final landform and enable suitable post-mining land uses, including the use of waste rock from the Project to backfill the approved OC3 final void, resulting in no final voids in the Moolarben Valley (including in the approved OC3 mining area). The entire Project area would therefore be made suitable for post-mining land uses.

MCO has invested significant capital expenditure to develop the existing Moolarben Coal Complex and ancillary infrastructure, mobile equipment, coal processing and transport facilities, sales contracts and customer base. The Project would therefore provide further return on substantial capital investment, while minimising potential environmental impacts relative to a Project requiring new infrastructure.

Consideration of key Government policies, criteria and Project objectives is provided in Table 7-1.

7.6 ASSESSMENT OF THE PROJECT AGAINST THE OBJECTS OF THE EP&A ACT AND ECOLOGICALLY SUSTAINABLE DEVELOPMENT CONSIDERATIONS

7.6.1 Consideration of the Project against the Objects of the EP&A Act

The SEARs (Attachment 1) require consideration of the consistency of the Project against the objects of the EP&A Act. Section 1.3 of the EP&A Act describes the objects of the EP&A Act as follows:

- (a) *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
- (b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- (c) *to promote the orderly and economic use and development of land,*
- (d) *to promote the delivery and maintenance of affordable housing,*
- (e) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *to promote good design and amenity of the built environment,*
- (h) *to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *to provide increased opportunity for community participation in environmental planning and assessment.*

Table 7-1
Key Policy and Objective Considerations

✓	Groundwater – Compliance with the “minimal impact” criteria of the <i>NSW Aquifer Interference Policy</i> .
✓	Surface Water – Best practice water management system designed in accordance with Landcom “Blue Book”, and to prevent downstream water quality impacts and maximise diversion of clean water.
✓	Water Use – Licences to be held for licensable take under the <i>Water Management Act 2000</i> .
✓	Air quality – Compliance with <i>Approved Methods</i> criteria.
✓	Blasting – Compliance with human comfort criteria in accordance with the <i>Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration</i> .
✓	Noise – Compliance with <i>Noise Policy for Industry</i> , <i>Interim Construction Noise Guideline</i> and <i>Rail Infrastructure Noise Guideline</i> criteria.
✓	Amenity – No additional private residences subject to mitigation and/or land acquisition due to potential air quality, noise or blasting impacts in accordance with the <i>Voluntary Land Acquisition and Mitigation Policy</i> .
✓	Social – Assessment undertaken in accordance with <i>Social Impact Assessment Guideline for State Significant Projects</i> identified no potential negative impacts of high or very high significance.
✓	Biodiversity – Appropriate offsets to be secured for residual impacts as per the <i>Biodiversity Conservation Act 2016</i> .
✓	Aboriginal Heritage – Assessment and consultation undertaken in accordance with the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> .
✓	Non-Aboriginal Heritage – Assessment undertaken as per the <i>Heritage Act 1977</i> and the Burra Charter. No Nationally, State or locally listed heritage items directly impacted by the Project.
✓	Visual – No direct views of the Project from privately-owned residences or land due to intervening ridgelines and existing vegetative screening.
✓	Lighting – Implementation of ‘good lighting principles’ provided by the <i>Dark Sky Planning Guideline</i> , where practicable.
✓	Economics – Assessment in accordance with the <i>Guidelines for the Economic Assessment of Mining and Coal Seam Gas Proposals</i> .
✓	Traffic – Assessment undertaken in accordance with <i>Guide to Traffic Generating Developments</i> , Australian Standards and Austroad guidelines to demonstrate no public safety issues resulting from the Project.
✓	Setting – Project is largely located on land previously disturbed for agriculture within the Moolarben Valley, on freehold Moolarben-owned land adjacent to existing mining operations.
✓	Final Landform – Improved final landform with no final voids, including the approved OC3 mining area.
✓	Post-mining Land Uses – Conceptual final land uses include agriculture, native woodland and grassland areas, and targeted biodiversity enhancement measures for threatened species.
✓	Greenhouse Gas Emissions – Very low Scope 1 emissions intensity due to shallow depth of mining and low fugitive emissions.
✓	State Policy – The <i>Net Zero Plan Stage 1: 2020-2030</i> states that “mining will continue to be an important part of the economy into the future and it is important that the State’s action on climate change does not undermine those businesses and the jobs and communities they support”.

The Project is considered to be generally consistent with the objects of the EP&A Act, as a result of the following:

- The Project would continue to facilitate local and regional employment and economic development opportunities (Appendix K).
- The Project would continue to develop the State's mineral resources (i.e. coal resources) and coexist with the local community, as well as with the wider land uses within the region (Section 2).
- The Project would incorporate relevant ESD considerations (Section 7.6.3).
- Mining operations, nearby agricultural enterprises and environmental management zones have co-existed since the commencement of operations at the Moolarben Coal Complex in 2010 and this would continue for the Project. The Project would not adversely impact, or be inconsistent with, adjoining land uses.
- The Project would incorporate a range of measures for the protection of the environment, including the protection of native plants and animals, threatened species, and their habitats (Section 6 and Attachment 9).
- The Project includes an ACHA and NAHA, which identify suitable management and mitigation measures for potential direct and indirect impacts of the Project (Sections 6.11 and 6.12, and Appendices F and G).
- The Project would largely utilise the existing infrastructure of the Moolarben Coal Complex.
- A PHA has been conducted to assess the potential hazards associated with the Project (Section 6.18 and Appendix R), and existing occupational health and safety measures for the approved Moolarben Coal Complex would continue to be employed for the Project.
- The Project would be determined by the Minister or the IPC, however, a wide range of stakeholders have been consulted throughout the assessment process.
- The Project would be developed in a manner that incorporates community engagement through the EIS consultation program (Section 5 and Appendix E), as well as the public exhibition of the EIS document and the major project assessment process.

7.6.2 Consideration of the Project against the Objects of the EPBC Act

Section 3 of the EPBC Act describes the objects of the EPBC Act as follows:

- (a) to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance; and*
- (b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and*
- (c) to promote the conservation of biodiversity; and*
- (ca) to provide for the protection and conservation of heritage; and*
- (d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples; and*
- (e) to assist in the co-operative implementation of Australia's international environmental responsibilities; and*
- (f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and*
- (g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.*

The Project is considered to be generally consistent with the objects of the EPBC Act, as:

- The Project incorporates measures to protect the environment (including aspects of the environment that are of national significance), via the Project design (Section 3) and the application of mitigation, offsets and other measures (Section 6).
- The Project would continue to develop the State's mineral resources (i.e. coal resources) while incorporating relevant ESD considerations (Section 7.6.3).
- The Project includes a BDAR and Aquatic Ecology Assessment, and a strategy to offset unavoidable impacts on ecology and other compensatory measures (Sections 6.5 and 6.6, and Appendices C and D).

- The Project is not expected to have a significant impact on water resources, on the basis that:
 - “minimal impact” to groundwater (as defined in the AIP) is predicted (Appendix A);
 - open cut mining would be setback from major drainage lines (4th order and above) by 200 m, including Moolarben Creek and Murdering Creek; and
 - significant impacts on aquatic ecology are predicted to be unlikely (Appendix D).
- The Project includes Aboriginal cultural heritage and non-Aboriginal heritage assessments, which identify suitable management and mitigation measures for potential direct and indirect impacts of the Project (Sections 6.11 and 6.12, and Appendices F and G).
- The Project would be developed in a manner that incorporates engagement from the community, landholders and the Aboriginal community through the EIS consultation program (Section 5), the public exhibition of the EIS document and the assessment process.
- The Project includes consideration of MCO’s contribution to maintaining Australia’s international environmental responsibilities and the potential impacts on these matters (e.g. consideration of greenhouse gas emissions).

7.6.3 Ecologically Sustainable Development Considerations

Background

The concept of sustainable development came to prominence at the World Commission on Environment and Development (1987), in the report titled *Our Common Future*, which defined sustainable development as:

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

In recognition of the importance of sustainable development, the Commonwealth Government developed the NSESD (Commonwealth of Australia, 1992) that defines ESD as:

using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.

The NSESD was developed with the following core objectives:

- *to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;*
- *to provide for equity within and between generations; and*
- *to protect biological diversity and maintain essential processes and life support systems.*

Australia’s commitment to the principles of ESD is considered in the EPBC Act, which defines the principles of ESD as:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;*
- if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;*
- the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;*
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;*
- improved valuation, pricing and incentive mechanisms should be promoted.*

For the purposes of this EIS, the relevant definition of ESD is that found in section 6(2) of the *Protection of the Environment Administration Act 1991*, which is the definition adopted by the EP&A Act.

Section 6(2) of the *Protection of the Environment Administration Act 1991* provides:

... ecologically sustainable development requires the effective integration of social, economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs—

- (a) *the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*

In the application of the precautionary principle, public and private decisions should be guided by—

- (i) *careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
 - (ii) *an assessment of the risk-weighted consequences of various options,*
- (b) *inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*
- (c) *conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*
- (d) *improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as—*
- (i) *polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,*
 - (ii) *the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,*
 - (iii) *environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

Consideration of Ecologically Sustainable Development for the Project

Project design, planning and assessment have been carried out applying the principles of ESD, through:

- responsible development of resources, enhancing community welfare and economic development;
- safeguarding intergenerational equity during the transition to low carbon energy sources (e.g. if the Project were not to proceed, future generations would not receive the socio-economic benefits as a result of the Project, which are likely to accrue beyond 2035);
- minimisation of impacts resulting from capital development through efficient use of existing infrastructure;
- avoidance and mitigation of impacts to biological systems via stream setbacks and habitat clearing constraints;
- incorporation of risk assessment and analysis at various stages in the Project design and environmental assessment and within decision-making processes;
- adoption of high standards for environmental and occupational health and safety performance; and
- consultation with regulatory and community stakeholders.

Assessment of potential medium-term and long-term impacts of the Project was carried out during the preparation of this EIS on aspects of surface water and groundwater, transport movements, air quality emissions (including greenhouse gas emissions), noise emissions, aquatic and terrestrial ecology, heritage and socio-economics.

The Project design takes into account biophysical considerations, including the principles of ESD as defined in section 6(2) of the *Protection of the Environment Administration Act 1991*.

In addition, it can be demonstrated that the Project can be operated in accordance with ESD principles through the application of mitigation measures, compensatory measures and offset measures that have been developed based on conservative impact assumptions for the Project.

The following sub-sections describe the consideration and application of the principles of ESD to the Project.

Precautionary Principle

Environmental assessment involves predicting the likely environmental outcomes of a development. The precautionary principle reinforces the need to take risk and uncertainty into account, especially in relation to threats of irreversible environmental damage.

An ERA (Appendix Q) and PHA (Appendix R) were conducted to identify Project-related risks and develop appropriate mitigation measures and strategies.

The PHA considers off-site risks to people, property and the environment (in the presence of controls) arising from atypical and abnormal hazardous events and conditions (i.e. equipment failure, operator error and external events).

The ERA addressed potential environmental impacts associated with the Project, including long-term effects. In addition, potential long-term risks are considered by the specialist studies conducted in support of this EIS (Section 1.6).

In the Groundwater, Surface Water and Flood Impact and Economic Assessments (Appendices A, B and K undertaken for the Project), risk and uncertainty have also been taken into account through sensitivity and/or uncertainty analysis.

Findings of these specialist assessments are presented in Section 6 and relevant appendices. Measures designed to mitigate potential environmental impacts arising from the Project are also described in Section 6, and summarised in Attachment 9.

The specialist assessments have evaluated the potential for harm to the environment associated with the development of the Project.

A range of mitigation measures have been adopted as components of the Project design to minimise the potential for serious and/or irreversible damage to the environment, including the development of environmental management and monitoring programs, compensatory measures and ecological offsets based on conservative assumptions. Where residual risks are identified, contingency controls have been considered (Attachment 9).

In addition, for key Project environmental assessment studies and aspects (i.e. Groundwater Assessment [Appendix A] and predicted greenhouse gas emissions and proposed mitigation measures [Appendix JJ]), peer review by recognised experts was undertaken (Attachment 5).

Social Equity

Social equity is defined by inter-generational and intra-generational equity. Inter-generational equity is the concept that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations, while intra-generational equity is applied within the same generation.

The principles of social equity are addressed through:

- assessment of the social and economic impacts of the Project (Appendices E and K, and Sections 6.15 and 6.17);
- management measures to be implemented in relation to the potential impacts of the Project on noise, ecology, blasting, air quality, groundwater, surface water, biodiversity, Aboriginal cultural heritage, non-Aboriginal heritage, agriculture and land resources, visual and landscape character, socio-economics, hazards and risks, and greenhouse gas emissions (Section 6);
- implementation of targeted environmental monitoring programs (Section 6) to minimise potential environmental impacts by ensuring the efficacy of implemented management measures; and
- implementation of measures during the life of the Project to offset potential biodiversity impacts that have been identified for the development (Section 6).

The Project would benefit current and future generations through the continuation of existing open cut workforce employment. Flow-on employment effects in the region would also be significant (Appendix E).

Economic benefits potentially forgone if the Project does not proceed amounts to a net benefit of \$182 M in NPV terms to the State of NSW (Appendix K).

The Project incorporates a range of mitigation measures to minimise potential impacts on the environment (Attachment 9). The costs of these measures would be met by MCO and have been included in the Economic Assessment (Appendix K). The potential benefits to current and future generations have, therefore, been calculated in the context of the mitigated Project.

Conservation of Biological Diversity and Ecological Integrity

Biological diversity or “biodiversity” is considered to be the number, relative abundance, and genetic diversity of organisms from all habitats (including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part), and includes diversity within species and between species as well as diversity of ecosystems (Lindenmayer and Burgman, 2005).

For the purposes of this EIS, ecological integrity has been considered in terms of ecological health and ecological values.

While the Project indicative surface disturbance extent avoids key environmental features and targets areas of lower ecological integrity (i.e. previously cleared grazing areas), it includes areas with recognised ecological values, which include the presence of threatened fauna species as well as TECs.

The environmental assessments in Sections 6.5 and 6.6 (and Appendices C and D) describe the potential impacts of the Project on the biological and ecological environment, associated Project mitigation and the indicative offset strategy.

Greenhouse Gas Emissions and Biological Diversity and Ecological Integrity

Many natural ecosystems are considered to be vulnerable to climate change. Patterns of temperature and precipitation are key factors affecting the distribution and abundance of species (Preston and Jones, 2005). Projected changes in climate would have diverse ecological implications. Habitat for some species would expand, contract and/or shift with the changing climate, resulting in habitat losses or gains, which could prove challenging, particularly for species that are threatened.

Anthropogenic Climate Change is listed as a key threatening process under the BC Act, and loss of climatic habitat caused by anthropogenic emissions of greenhouse gases is listed as a key threatening process under the EPBC Act.

It is acknowledged that (subject to the efficacy of national and international greenhouse gas abatement measures) all sources of greenhouse gas emissions in NSW, irrespective of their scale, would contribute in some way towards the potential global, national, state and regional effects of climate change.

The Project’s contribution to global climate change effects, including the associated environmental impacts, would be in proportion with its contribution to global greenhouse gas emissions.

Greenhouse gas emissions from the Moolarben Coal Complex are currently measured and reported annually in accordance with the NGER Act, which would continue for the Project. Greenhouse gas emissions reporting for the Moolarben Coal Complex open cut operations uses a site-specific Scope 1 fugitive emissions intensity (including emissions from both methane and CO₂), calculated in accordance with Method 2 of the NGER Measurement Determination based on detailed gas content and composition testing (Appendix J and Section 6.16).

In addition to Scope 1 and 2 emissions for the Project, the Scope 3 emissions for the Project from upstream and downstream sources would also contribute to global greenhouse gas emissions. The majority of Scope 3 emissions from the Project relate to the downstream use of Project coal from international export customers.

Scope 3 emissions from the use of Project coal in overseas customer countries would be managed in accordance with customer countries’ commitments under the *Paris Agreement* or equivalent domestic policy (detailed in Appendix J) and would not contribute to Australian greenhouse gas emissions or factor into Australian greenhouse gas reduction targets.

If the Project does not proceed, global demand for coal may be satisfied by other sources and, therefore, there would not be a corresponding reduction in global greenhouse emissions in the atmosphere. The Project’s relatively low greenhouse gas emissions intensity, very low levels of fugitive emissions from open cut mining and low cost of production (due to low strip ratios) means that it would remain competitive in the global coal market.

Potential environmental costs associated with Project greenhouse gas emissions have also been considered in the Economic Assessment (Appendix K).

Measures to Maintain or Improve the Biodiversity Values of the Surrounding Region

A range of measures would be implemented for the Project to maintain or improve biodiversity values of the region in the medium- to long-term. As summarised below, and detailed in Sections 6.5 and 6.6, these measures include impact avoidance, minimisation, mitigation and offsets (for residual impacts).

MCO has well established and accepted management practices for operating an open cut coal mine in the same environment as the Project. These include measures to limit the risk of spreading weeds and other pests, measures to manage the risk of bushfires, progressive rehabilitation, and measures to manage noise and lighting impacts.

The layout and location of the Project indicative surface disturbance extent have been through a design process to avoid and/or reduce impacts to biodiversity values. This includes avoidance (as far as practicable) of TECs and threatened fauna habitat, as well as a 200 m setback of open cut mining from Moolarben Creek and Murdering Creek, and design of the Project to avoid direct disturbance of mapped rocky habitat associated with threatened bat species and the Broad-headed Snake.

Residual impacts of the Project to biodiversity would be provided for through biodiversity offsets. All residual impacts have been conservatively assessed and an offset strategy would be implemented as part of the Project to maintain or improve biodiversity value of the region in the medium- to long-term.

Further detail on the management of potential biodiversity impacts is provided in Sections 6.5 and 6.6.

Valuation

One of the common broad underlying goals or concepts of sustainability is economic efficiency, including improved valuation of the environment. Resources should be carefully managed to maximise the welfare of society, both now and for future generations.

In the past, some natural resources have been misconstrued as being free or under-priced, leading to their wasteful use and consequent degradation. Consideration of economic efficiency, with improved valuation of the environment, aims to overcome the under-pricing of natural resources and has the effect of integrating economic and environmental considerations in decision making, as required by the principles of ESD.

While environmental costs have been considered to be external to Project development costs historically, improved valuation and pricing methods attempt to internalise environmental costs and include them within Project costing.

The Economic Assessment (Appendix K) has incorporated environmental values via direct valuation where practicable (e.g. greenhouse gas emissions of the Project). Furthermore, wherever possible, direct environmental effects of the Project would be internalised through the adoption and funding of mitigation measures by MCO to mitigate potential environmental impacts (e.g. biodiversity offset costs, water access licence costs).

The Economic Assessment in Appendix K indicates a net benefit (i.e. net of the value of externalities including Scope 1 and 2 greenhouse gas emissions) of \$182 M in NPV terms to the State of NSW would be forgone if the Project is not implemented.

While the value of externalities from indirect (Scope 3) greenhouse gas emissions are not considered in the net benefit to NSW, neither are the economic benefits associated with the ongoing use of the product coal for electricity and other uses, which have been recognised as significant to the State and Australia (NSW Government, 2020a).

Scope 3 greenhouse gas emissions that may be emitted by other parties, namely from the use of the product coal produced by the Project, are considered in this EIS. On average, over the life of Project, the indirect (i.e. Scope 3) emissions from these activities are estimated to be approximately 8.58 Mt CO₂-e per year (Appendix J), with a proportion of these global Scope 3 emissions occurring directly in NSW (e.g. processing of Project ROM coal and transport of Project product coal).

Greenhouse gas emissions from the Moolarben Coal Complex are currently measured and reported annually in accordance with the NGER Act, which would continue for the Project.

7.7 CONCLUSION

The Project is an extension of the existing approved Moolarben Coal Complex, that would comply with applicable statutory requirements and relevant strategic and statutory planning policy objectives (Sections 2 and 4, and Attachments 6 and 7).

This would provide for the continuity and security of employment by extending the duration of employment for existing open cut workforce.

It would also continue to support the financial sustainability of the Moolarben Coal Complex and the broader Western Coalfield regional economy.

The Project resource can be recovered at a generally low depth of cover, allowing for economically efficient extraction with minimal potential for significant environmental impact, and is visually isolated from surrounding private residences by intervening topography (associated with the Munghorn Gap Nature Reserve and other nearby ridgelines).

The Project has been designed to avoid or minimise potential impacts to key natural features in the local area (i.e. setbacks from higher order streams and avoidance of mapped rocky habitat associated with threatened bat species and the Broad-headed Snake located on the steeper terrain adjacent to the Munghorn Gap Nature Reserve).

Engagement with members of the public and key Government agencies has informed MCO's design of the Project, including adoption of a range of avoidance measures to minimise potential amenity impacts to nearby residences, and conceptual post-mining land uses that include agricultural land and native vegetation (Section 7.4 and Attachment 9).

MCO would apply offsets or other Project-specific measures to address key residual impacts on terrestrial ecology (Section 6.5 and Appendix C).

The site is suitable for the proposed Project use, as mining operations and nearby agricultural enterprises have co-existed since the commencement of operations at the Moolarben Coal Complex, and the Project would generate a net benefit to the State of NSW (Section 6.15 and Appendix K).

Economic benefits potentially forgone if the Project does not proceed amounts to a net benefit of \$182 M in NPV terms to the State of NSW (Appendix K).

MCO is committed to the sustainable development of natural resources and to successful environmental management. MCO believes the Project is a logical extension of an existing mining operation that would develop the resources the world needs, while minimising environmental impacts, and is in the public interest.